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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,356

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Henri Arnold De Bruyn

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EXAMINER

THEODORE, MAGALI P

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,356	<b>Applicant(s)</b> DE BRUYN ET AL.	
	<b>Examiner</b> MAGALI P. THEODORE	<b>Art Unit</b> 4191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |



**Binder Composition and Method for Treating Particulate Matter**

Examiner: Théodore      Art Unit: 4191      SN: 10/501,356      May 7, 2008

***Specification***

1.      The disclosure is objected to because of the following informalities: "benzene" is spelled "bensene" [p 6 ln 2, p 8 ln 20, p 11 ln 7, p 14 ln 26] which is not recognized by American search tools.

Appropriate correction is required.

***Claim Objections***

2.      Claims 11, 31, 39 and 50 are objected to because of the following informalities:

        In claims 11, 31 and 50, "benzene" is spelled "bensene," which is not recognized by American search tools.

        As written, claim 39 depends on itself. By analogy with the other claim families, claim 39 has been interpreted to depend on claim 38.

Appropriate correction is required.

3.      Claims 5-20, 25-38 and 44-60 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend on any other multiple dependent claim. See MPEP § 608.01(n).

4. Applicant is advised that should claims 1-17 and 18-20 be found allowable, claims 21-37 and 38-39 respectively will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 61-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of claims 61-63 recites something "substantially as herein described and exemplified." Specifically which limitations are included in that phrase is not clear.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. Claims 1-2, 5, 8, 9, 12-22, 25, 28-29, 32-41, 44, 47-48 and 51-60 are rejected under 35 U.S.C. 102(b) as being anticipated by de Bruyn (WO 00/40669).

Regarding claims 1, 21 and 40, de Bruyn discloses a method of preparing a settable binder composition for treating particulate material to form a solid aggregate matrix by mixing a urea formaldehyde precondensate (p 1 ln 11-14, p 2 ln 1-2), a polar solvent (water, p 5 ln 19-21), additional urea (p 1 ln 15-16) and an acid (citric acid, p 3 ln 8-10), mixing resulting the binder composition with the particulate and allowing the binder to set (soil, p 7 ln 11-12). The binder's end pH is "most preferably between 3.5 and 5" (p 4 ln 5-6), well within the range of 2.0 to 5.3 recited by the claim. As de Bruyn shows in Example 3 (p 10 ln 22 - p 11-16), the binder's setting time is inherently determined by the end pH. Of two binder compositions that vary only in their acidity, the more acidic "third mixture," with an end pH of 3.85, sets in 65 minutes (p 11 ln 5-7, 10-11), in contrast to the more basic "second mixture" which has a pH of 5.45 and sets in 1400 minutes (p 11 ln 3-4, 9-10).

Regarding claim 2, 22 and 41, de Bruyn teaches that the polar solvent is water (p 5 ln 19-21).

Regarding claims 5, 8-9, 25, 28-29, 44 and 47-48, de Bruyn teaches using an anionic bitumen emulsion as a binding promoter (p 5 ln 7-8, p 15 ln 7-8, 20-21).

Regarding claim 12, de Bruyn teaches adding silicones, silanes, oils, anti-corrosion agents, ultraviolet light blocking agents, biocides, pH buffers, cement, ammonia, ammonium salts, plasticizers (p4 ln 9-13) or phenols (p 4 ln 18) to the binding mixture before setting.

Regarding claims 13, 33 and 52, de Bruyn teaches that the plasticizers may be phthalates, hydrocarbons, acetates or glycols (p 4 ln 15-16).

Regarding claim 14, 34 and 53, de Bruyn teaches that the ultraviolet light blocking agents may be organic phenols, phosphates or inorganic oxides (p 4 ln 18-19).

Regarding claim 15 and 35 , de Bruyn teaches that the inert particulate may include any combination of natural or synthetic glass-, steel-, carbon- or polymeric fibers (p 4 ln 21-22), sand, soil, gravel, clay, silica, particulate ore, rubber, stones, pebbles, partly bound cementitious masses, grass, slag, waste dump material or coal (p 4 ln 25 - p 5 ln 2).

Regarding claim 16, 36 and 54, de Bruyn teaches that the end ratio of formaldehyde to urea in the binder is "between 3:1 and 1:1, and most preferably between 2:1 and 1:1" (p 2 ln 13-16). These ranges cover that cited by the claim, 1.5:1 to 2.5:1.

Regarding claim 18, de Bruyn teaches that aggregate matrix maybe compacted into a mold before setting (p 7 ln 5).

Regarding claims 19-20, 38-39 and 56-57, de Bruyn teaches that the acid is citric acid (p 3 ln 8).

Regarding claims 58-59, de Bruyn teaches treating a body of soil by spraying the binder onto the soil and letting the binder seep in (p 5 ln 12-13).

Regarding claim 60, de Bruyn teaches a wide range of artifacts made by spraying the binder on bodies of soil, among them roads, building foundations and water storage devices (p 7 ln 13-25).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).



11. Claims 3-4, 23-24 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Bruyn as applied to claims 1-2, 5, 8, 9, 12-22, 25, 28-29, 32-41, 44, 47-48 and 51-60 above, and further in view of Markessini et al. (US 4,886,854).

De Bruyn does not teach including a sugar in the binder composition. However, Markessini et al. teach combining glucose, fructose, sucrose or a mixture thereof (col 2 ln 60-64) with a urea and formaldehyde (col 2 ln 9-11) to make a binding composition that is safer for the environment and for workers than resin (col 1 ln 13-19). Therefore it would be obvious to an ordinary artisan to add glucose, fructose, sucrose or a mixture thereof to the urea-formaldehyde binder taught by de Bruyn because Markessini et al. teach this combination as a safe and effective substitute for resin.

12. Claims 6-7, 26-27 and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Bruyn as applied to claims 1-2, 5, 8, 9, 12-22, 25, 28-29, 32-41, 44, 47-48 and 51-60 above, and further in view of Terpstra et al. (US 5,523,049).

De Bruyn does not teach using a complex fatty acid derived from the oxidation of vegetable sugars as a binding promoter. However, Terpstra et al. teach adding humic acid to a urea-formaldehyde binder to "achieve higher loading of the powder particles in the binder" (col 4 ln 22-29). Therefore it would be obvious to an ordinary artisan to add humic acid to the binder taught by de Bruyn because Terpstra et al. teach that humic acid helps integrate the particles with the binder.

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13. Claims 10-11, 30-31 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over de Bruyn as applied to claims 1-2, 5, 8, 9, 12-22, 25, 28-29, 32-41, 44, 47-48 and 51-60 above, and further in view of Prather (US 4,376,088).

De Bruyn does not teach using a surfactant as a binding promoter. However, Prather teaches adding the dodecylbenzene sulfonic acid (col 2 ln 5, col 7 ln 49, ln 59) to a binder composition (col 1 ln 64-68) to promote uniform binding by disperse the binding agent in an aqueous solution (col 5 ln 17-26) and later to facilitate separation of the shaped article and the shaping means (col 1 ln 46-51). Therefore it would be obvious to an ordinary artisan to add dodecylbenzene to the binder taught by de Bruyn because Prather teaches using dodecylbenzene sulfonic acid both to as a surfactant and as a release agent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAGALI P. THEODORE whose telephone number is (571)270-3960. The examiner can normally be reached on Monday through Friday 9:00 a.m. to 5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571- 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Magali P. Théodore/  
Examiner, Art Unit 4191

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 4191